**83426KNM**
**Customer No. 01333**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Dorian Liepmann, et al

DNA SEQUENCING AND GENE IDENTIFICATION

Serial No. 10/086,087

Filed 28 February 2002

Group Art Unit: 1634

Examiner: Thomas J. O'Farrell

I hereby certify that this correspondence is being deposited today with the United States Postal Service as first class mail in an envelope addressed to Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Karen J. Wacenske

Karen J. Wacenske

9-27-05

Date

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

**DECLARATION UNDER 37 C.F.R. §1.131**

I, Zhihao Yang, declare that:

I received a degree of PhD in Chemistry from the University of Wisconsin in 1998;

I have been employed as a research scientist with Eastman Kodak Company since August of 1998;

I was employed in the development of coatings for micro-electromechanical systems (MEMS) technology from 1998-2003;

I am a co-inventor of the above-captioned patent application; and

I am familiar with the Office Action dated 31 May 2005, and the references cited therein.

Chan et al. (Pre Grant Publication 2003/0059822, "Chan-1") and Hannah et al. (US Patent 6,767,731 B2) are asserted against the above-identified pending application under 35 USC §102(e). I conceived of the claimed invention with co-inventor Tiecheng (Alex) Qiao before the first U.S. filing date of either application, as evidenced by the attached notebook page 154 dated June 5, 2001 (European notation), recording our conversation. After further consideration, we submitted our idea to the legal department of Eastman Kodak Company using a company tracking system,

Invention Tracker. The idea was first recorded in Invention Tracker August 10, 2001, and was approved for patent application preparation August 27, 2001. The application was then prepared in corporation with the legal department, and filed on February 28, 2002. The attached documents show that the invention was conceived before the earliest U.S. filing date of either Chan-1 or Hannah, and diligence was exercised in pursuing a patent application from the time of conception to the time of filing.

The undersigned declares further that all statements made herein of the undersigned's own knowledge are true and all statements made on information and belief are believed to be true. These statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Attachments: Notebook page 154
Invention Tracker entry

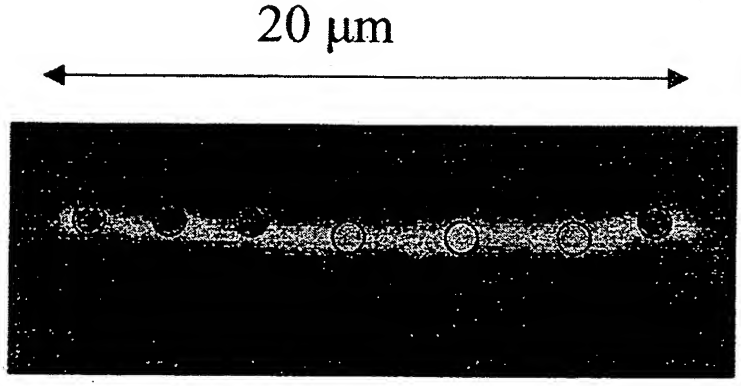
Date: 9/26/05

Zhihao Yang

5:15 PM Discussion with Alex Qiao

Single Molecular DNA Detection using Color-beads Labels

* ~~Attach~~ different oligo-nucleotides with different colored beads
* hybridize the labeled oligo-nucleotides with unknown DNA molecules
* stretch the DNA molecules from ~~random~~ random coil to linear comfirmation under microscope by a microfluidic device as shown in Berkeley.
* record the order of colored-beads to determine the ~~species~~ species of the DNA.






BEST AVAILABLE COPY

Invention Tracker

Eastman Kodak Company Restricted
Prepared For Patent Attorney

| Status | Idea # | Docket # | Submitting Inventor | Title |
|---|---|---|---|---|
| Complete | SIS-1026 | 83426 | Zhihao Yang | Single Molecular DNA Sequencing or Decoding |

✓ - denotes a required field

## Step 1 - Inventor : Idea Submission

✓ **Technology Cluster/Portfolio #:** 23 - Health Imaging Equipment

✓ **IP Coordinator:** SIS - Bill McLaughlin - Scientific Imaging Systems

**Idea #:** SIS-1026

**Idea Entry Date:** 08/10/2001

**Title:** Single Molecular DNA Sequencing or Decoding

✓ **Submitting Inventor:** Zhihao Yang/486108/US/EKC Replace Name
**Submitting Inventors Division:** Hardcopy & Display Tech
**Division Code:** FEA
**Other Kodak Inventors:** Tiecheng A. Qiao/436337/EKC Add Name Remove Name
**Other Inventors:** Susan J. Muller, Dorian Liepmann

**Is this idea entry originating in Europe?:** ○ Yes ● No

**Are any inventors on this Idea Non-US Citizens:** ● Yes ○ No

| Inventor Name: | Country: |
|---|---|
| Zhihao Yang | China |

✓ **Earliest Date of Invention:** 06/05/2001 (a)

**Notebook No./Page No./Other:**

**Other (e.g., Technical Reports, Memos, Make Sheets, etc.)**

## Description of Invention

**Answer following questions and/or attach document**

✓With regard to what project or product was your invention made?
✓What problem does the invention solve?
✓How does the invention solve the problem?
✓Data that shows how the invention solved the problem: Example
✓Best mode known of practicing the invention: Example
✓How have others tried to solve the problem? Example
✓What other products might this invention be useful for?

✓Are you currently working with an Attorney on this invention? ○ Yes ● No

Send E-mail to IP Coordinator Send  Date Sent: 08/10/2001

## Step 2 - IP Coordinator : Idea Approval

Instructions for sending Idea back to a previous step ->>

**IP Coordinator:** William E. Mclaughlin

Is there sufficient information provided in STEP1 to assign action? ○ Yes ○ No

✓Submitting Inventors Division: Hardcopy & Display Tech
Division Code: FEA
✓Attorney: MANNE, KATHLEEN - 455014

Project: Functional Genomics Imaging

## Value Assessment of Potential Patent

✓What is the primary product area that would benefit from use of this invention?
✓What are product attributes/customer needs that this patent will protect?
✓How critical are these attributes to the marketplace?
✓If Eastman Kodak Company patents this invention, who will care and why? Example

| ?✓ Internal Use | ?✓ External Use | ?✓ Detectability |
|---|---|---|
| 5 | 8 | 1.00 |

## Pathforward

Action:—> Pursue Patent  IPC Approved: (b) 08/27/2001

## Step 3 - Patent Legal Staff : Docketing/Patentability Meeting

### A. Attorney

Instructions for sending Idea back to a previous step ->>

**Attorney:** Noval, William - 314753 **Correct Attorney:** MANNE, KATHLEEN - 455014

**Correct Attorney Selected?** ○ Yes ● No **If no, select correct Attorney:** MANNE, KATHLEEN - 455014

✓ **Patent Legal Assistant:** Kukurudza, Carol - 483048

● **PLA to Schedule Patentability Meeting**
○ **Meeting Previously Held - no need to schedule**

**Send E-mail to PLA (and to new Attorney if changed)** Send **Date Sent:** 09/19/2001

### B. PLA

Instructions for sending Idea back to a previous step ->>

● **PLA to Schedule Patentability Meeting**
○ **Meeting Previously Held - no need to schedule**

#### Input the Following info into PCMaster at time of Docketing

| | |
|---|---|
| **IP Portfolio Code:** | 023 |
| **Earliest Date of Invention :** | 06/05/2001(a) |
| **IPC Approval Date:** | 08/27/2001(b) |
| **Title:** | Single Molecular DNA Sequencing or Decoding |
| **Submitting Inventor:** | Zhihao Yang/486108/EKC<br>Zhihao Yang/486108/US/EKC |
| **Other Inventors:** | Tiecheng A. Qiao/436337/EKC<br>Susan J. Muller<br>Dorian Liepmann |
| **Divison Code:** | FEA |
| **Cluster Coord Code:** | 023SIS |
| **Idea #:** | SIS-1026 |

☒ **Docketing Complete** ✓ **Docket #:** 83426

✓ ☒ **PLA Has Scheduled Meeting**

**Send E-mail to Attorney** Send **Date Sent:** 09/07/2001

### C. Attorney

Instructions for sending Idea back to a previous step ->>

**Check-off Agreed Upon Action Items from Patentability Meeting:**
(Inventor action unless noted otherwise)

- ☐ Prior art search by inventor and by attorney
- ☐ Search for related pending Kodak applications by inventor and by attorney
- ☐ A state of the art summary and description of how the invention improves on the art
- ☐ A flowchart detailing the invention
- ☐ Drawings showing the invention
- ☐ Detailed description of the invention
- ☐ Methods of making representative compounds or compositions for chemical patents
- ☐ Experimental comparisons to the prior art for chemical patents
- ☐ Test results for chemical patents
- ☐ Examples of the use of chemical compounds or compositions and any relevant properties for chemical patents
- ☐ Other items and/or clarification/comments of the above items

✓ **Estimated date for items to be complete:**

☐ **Check here if multiple dockets**

**Send E-mail to Inventor** Send **Date Sent:** 09/19/2001

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## Step 4 - Inventor : Complete Action Items for Attorney Ready

**Instructions for sending Idea back to a previous step ->>**

### List of Action Items:

**Agreed Upon Action Items from Patentability Meeting:**

(Inventor action unless noted otherwise)

- ☐ Prior art search by inventor and by attorney
- ☐ Search for related pending Kodak applications by inventor and by attorney
- ☐ A state of the art summary and description of how the invention improves on the art
- ☐ A flowchart detailing the invention
- ☐ Drawings showing the invention
- ☐ Detailed description of the invention
- ☐ Methods of making representative compounds or compositions for chemical patents
- ☐ Experimental comparisons to the prior art for chemical patents
- ☐ Test results for chemical patents
- ☐ Examples of the use of chemical compounds or compositions and any relevant properties for chemical patents
- ☐ Other items and/or clarification/comments of the above items

**Estimated date for items to be complete:**

**Revised estimated date for items to be complete:** 01/16/2002

If the "attorney ready disclosure" form has not been started:

- click on button below
- Scroll down to the word document "Application Template"

- Complete and save to your desktop as a xxxx.doc format
- Attach xxx.doc to your idea using the attachment icon within IT

Attorney Ready Disclosure Form

✓ ☒ **Inventor has completed the List of Actions.**

**Send E-mail to Attorney** Send **Date Sent:** 02/28/2002 **(c)**

## Step 5 - Patent Legal Staff : Confirmation and Filing

### A. Attorney

**Instructions for sending Idea back to a previous step ->>**

**Completion of "Attorney Ready Disclosure"Confirmed for** SIS-1026 ● Yes ○ No

☐ **External Attorney** **Name: , Phone:**

| Internal Use | | External Use | | ? ✓ Claims Coverage | | Detectability | | Rating |
|---|---|---|---|---|---|---|---|---|
| ( 5.00 | + | 8.00 ) | X | 5 | X | 1.00 | = | 65.00 |

✓ **Do you recommend foreign filing?:** ○ Yes ● No ○ IPC to recommend

**Send E-mail to PLA** Send **Date Sent:** 02/28/2002

### B. PLA

**Instructions for sending Idea back to a previous step ->>**

☒ **Filing Complete**

✓ **Mailing Date:** 02/28/2002 **(d)**

☐ **External Attorney** **Name: , Phone:**

**Input the following info into PCMaster**

**Val # at Filing: 0508051.065**
**Attorney Ready Date: 02/28/2002(c)**

**Add final "Application Filed" document to the bottom of the Invention Form in a .pdf format**

**Send E-mail to IP Coordinator and** Send **Date Sent:** 04/26/2002 **(Review for Foreign Filing)**

## Step 6 - IP Coordinator : Confirm IP Evaluation and Foreign Filing

| Internal Use | | External Use | | Claims Coverage | | Detectability | | Rating |
|---|---|---|---|---|---|---|---|---|
| (5.00 | + | 8.00) | X | 5.00 | X | 1.00 | = | 65.00 |

✓**Rating Changed:** ○ Yes ● No

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**The attorney has recommended the following foreign filing:** None

✓**Do you want to change attorney's recommendation?** ○ Yes ○ No

## Info from Step 1 and 6 ( Prior to 10/01/2004)

### Step 1

08/10/2001 10/20/2004

**Summary of Invention:** A large DNA molecule, e.g. 20 micron in length, can be stretched from random coil to linear thruogh a micro-channel by a micro-fluidic MEMS device. A serial of color beads or markers (1-1000 nanometer in size) having specific oligo-nucleotides are present to complimentarily bond at the different sites of a single strand DNA molecule. Therefore, when the DNA molecule passes through the micro-channel with the stretched linear conformation, the order of color beads or markers can be read optically, and the sequence information of the DNA can be obtained or decoded.

**Advantages:** Single molecular detection, no PCR needed

**Limitations:**

**Why this invention should be patented:**

**(a) Is there a reasonable prospect of commercial use of the invention by Kodak?** ● Yes ○ No

**(b) Is there a reasonable prospect of commercial use by others?** ● Yes ○ No

**(c) Is further work planned on the technology?** ● Yes ○ No

**Additional comments on (a), (b), or (c):**

**Has the invention been reduced to practice?** ○ Yes ● No

**Where, When?**

**Has the invention been disclosed to the public or offered for sale?** ○ Yes ● No

**Where, When?**

**Preliminary prior art search:** MicroPatent PATMAP **Date Completed:**

**List or Attach Relevant Prior Art:**

### Step 6

## Who can View and Edit this Document

## Attachments and Comments

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Date Created: 08/10/2001, Author: Zhihao Yang Workflow Type: IP Coordinator without Manager Date Modified: 08/01/2005 04:35:31 PM